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ECONOMIC STUDY

of the

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James Lick Memorial Freeway

San Francisco, August 1960

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IV-R/W General
Land Economic Studies

Mr. James R. McCarthy, Director
Department of City Planning
City and County of San Francisco
100 Larkin Street
San Francisco, California

Re: San Francisco James Lick Freeway
Study

Dear Mr. McCarthy:

This office has recently completed and sent the original and copies of the San Francisco James Lick Freeway Study to Headquarters Office in Sacramento. As was agreed with Mr. Proctor, we are also sending you a copy.

Although the form of the final draft may differ slightly from the copy sent to you, we expect the essential findings and conclusions to remain unchanged.

We hope to discuss the Study with you at your convenience and profit from any comments you may wish to make.

Very truly yours,

J. P. SINCLAIR
Assistant State Highway Engineer

By Whitney F. Woodhead

WHITNEY F. WOODHEAD
Right of Way Agent

Attachm.

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By ORIGINAL SIGNED BY

WHITNEY F. WOODHEAD
Right of Way Agent

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ECONOMIC STUDY

of the

JAMES LICK MEMORIAL FREEWAY

in the

CITY AND COUNTY OF SAN FRANCISCO

August 1960

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INTRODUCTION

The modern freeway, which is characterized by impressive structures and broad ribbons of concrete, is symbolic of America's growth and prosperity.

The increasing automobile population on our national, State and County roads, the continual expansion of these road systems and their intrusion into neighborhoods and districts formerly distant from heavily traveled highways, increases the concern of private citizens as well as public officials charged with making decisions affecting the public welfare. Since the purchase of a home is one of the largest investments undertaken by the average home owner, he is justifiably curious about its effects when a freeway is proposed as his neighbor. Apparent future need for continued expansion of freeway systems in our cities emphasizes the need for more accurate information about freeway effects upon developed stable neighborhoods within metropolitan areas.

The purpose of this study is to determine freeway effects upon the value and use of adjacent residential property in San Francisco; the highly urbanized center of the San Francisco Bay Area.

Property near the James Lick Memorial Freeway, as it runs southerly from 17th Street to Third Street, was chosen for the study. This study area includes all real property within 200' of the freeway right of way.

The James Lick Memorial Freeway is the first highway in San Francisco to be built to full freeway standards. It is a typical urban freeway on different alignment from the old Bayshore route it supplanted. It is characterized by restricted access except at designated entrance and exit ramps. Adequate grade separation structures have also been provided for cross freeway city traffic. The first three construction sections of this freeway were chosen for study because they have been completed long enough to furnish an after period of sufficient length for significant statistical analysis of freeway effect.

The 3.6 mile study area is predominantly residential, both single-family and multiple-family. Other uses lie within and near the study area, and their relationship to the residential property was considered. The study area and adjacent neighborhoods are part of old San Francisco; it is an area whose zoning and development pattern has remained unchanged for years. It is an area with a high percentage of pre-1906 buildings. Over-all neighborhood appearance is somewhat drab, although maintenance is generally average.

The freeway value effects studied are proximity effects. Proximity effects are the effects upon properties lying within sight and sound of the freeway. It is realized that the entire area served by a freeway is affected by its construction. However, this study has been focused upon proximity effects.

Selection of a sight and sound criterion effectively set

boundaries to include tiers or bands of properties lying within 200' of the freeway. Selection of this width flowed naturally from the character of the study area since city lots average about 100' in depth. Accordingly, two tiers of homes on each side of the freeway were studied. This allows comparison of the tiers: Tier 1, immediately adjacent to the freeway or its frontage road, and Tier 2, separated from the freeway by Tier 1.

In the appendix, the reader will find photographs and maps which give visual representation of the Study and Control Area referred to in this report.

SUMMARY AND CONCLUSIONS

Study Methods

A purpose of this study, to determine freeway proximity effect on property value, influenced the choice of study methods. Stated simply, the question is: What change in adjacent property value was caused by the freeway"

The need for a simple, usable answer to this question determined the choice of practical "before and after" techniques. The value-change related to the freeway is the difference between property value before any freeway influence and property value after freeway effects have occurred.

Since other economic influences have been acting upon the value during this "before" and "after" period, a measure of the net effect of all such non-freeway influences is also necessary. The "before and after" technique measures this non-freeway effect by use of carefully selected "control areas".

Control areas are comparable in all important respects to the study area except for the presence of the freeway itself. Value changes in the control areas are measured over the same time interval as employed when measuring value-changes in the study area. Since all non-freeway influences on property value acted equally upon the two areas, the value effect of the freeway itself is measured by

comparing the value-changes in each area. The amount by which the control area increased more in value (or decreased less) than the study area is a measure of freeway detriment. Similarly, the amount by which the study area increased more (or decreased less) than the control area is a measure of freeway benefit to the value of adjacent property.

Three "before and after" methods were used. Methods A and B are statistical techniques measuring the value change of improved residential property. Method C is an appraisal approach measuring the value change of vacant residential building sites. The three methods are briefly described at the beginning of the section on "STUDY METHODS".

Findings and Analysis

The objective finding of this study indicates a 3% freeway value benefit to adjacent residential property. In other words, freeway-adjacent property increased an average of about 3% more in value than did comparable property in the control areas. The analysis of this result includes three considerations which have been assigned some weight in reaching the conclusion. The three possible explanations for a small beneficial measurement follow:

> Post-freeway buyer anticipation of a potentially more profitable land use near the freeway. Advertising signs are legal in a small percentage of the residential area. In addition to many advertising structures on non-residential property, a few such signboards are located upon residential properties.

Possible slight depression of the "before" prices (and consequent overestimation of the study area value increase) due to unduly pessimistic, uninformed sellers. They may have accepted somewhat low prices because of their fears of adverse freeway effect.

Possible small chance variations in the data and the methods. (See Findings and Analysis Section).

Conclusions

Considering the objective finding of this study and its analysis, this conclusion ensues directly: The freeway has had little or no effect upon the value of adjacent residential property. Residential property near the freeway has increased in value to the same extent as comparable property in the control areas. In other words, the value increase of freeway-adjacent residential property would not have been different if the freeway had been constructed several blocks or more from its present alignment.

Based upon the extensive observations and analysis required for the value-change conclusion, it has been possible to reach a firm and fair conclusion regarding the freeway effects upon adjacent property use-changes. The freeway through the study area has exerted practically no effect upon the use of nearby properties. Changes in property use in the study area and vicinity for any reason have been uncommon. Few can be

attributed to the construction of the freeway. Examples of these atypical changes include new advertising structures and changes in the location of gasoline service station sites.

An absence of freeway effect upon the use of nearby property and upon the value of adjacent residential property can be expected in situations such as encountered in this study. The freeway was designed to minimize inconvenience to local traffic including pedestrians. The neighborhoods touched by the study area are and have been well established, stable, and well-developed. The pattern of land use has been unchanged for many years. This is true partly for geographical and historical reasons and partly because the city has allowed relatively few changes in zoning in and near the study area.

THE STUDY

The Freeway and the Study Area

THE FREEWAY AND THE STUDY AREA

SAN FRANCISCO

San Francisco, strategically centered at the heart of the great productive Central Empire of California, is one of the foremost cities in the nation. San Francisco traces its history to the courageous adventure-loving English, Portugese and Spanish explorers, traders, soldiers and missionaries who, as early as 1542, had discovered the Farallon Islands (now a part of San Francisco). Today's San Franciscans believe that the spirit of adventurous enterprise still inspires San Franciscans to great new experiments which benefit the community. One such experiment is studied in this report - The James Lick Memorial Freeway.

FREEWAY

The James Lick Memorial Freeway is a major freeway facility constructed by the State of California within the city of San Francisco beginning near 17th Street, thence continuing down the Peninsula. It is frequently referred to as the Bayshore Freeway.

Width

Along most of its length, the freeway has six lanes; three lanes in each direction separated by a dividing strip. Between 17th Street to Army Street, it has eight lanes; four in each direction. This eight lane section with on and off ramps to Army Street was designed to provide

freeway service for "short trip" as well as "long trip" traffic.

Interchanges and Ramps

Fairly constant elevation, as well as unimpaired local traffic movement, was maintained by carrying the freeway over Army Street, Alemany Boulevard and Third Street on interchange structures with on and off ramps to major city streets. Southerly of Army Street, connection is made to Bayshore Boulevard, which serves as an outer highway or frontage road on the easterly side of the freeway from Army Street to Third Street. Southerly of Alemany Boulevard connection is provided to San Bruno Avenue which serves as a frontage road on the west side.

Alignment

Northerly of Army Street, the freeway is constructed on new alignment and now carries traffic 1 to 3 blocks easterly of the former Potrero Avenue route. Southerly of Army Street, the freeway lies just westerly of Bayshore Boulevard, which was formerly shared by local and through traffic.

THE STUDY AREA

The area studied in this report adjoins a 3.6 mile long section of the freeway lying between 17th Street on the north and Third Street to the south. This study area includes property located within 200' of the freeway or

its frontage road. Since the freeway right of way varies between 230' and 260' in width dependent upon topographical and design requirements, the study area can be considered as a strip roughly 600' wide lying between 17th Street and Third Street.

Proceeding southerly from 17th Street, the roadway winds through these San Francisco neighborhoods: Potrero Hill, Peralta and Bernal Heights, Islais Creek, Silver Terrace, Portola and Bayview Districts. These districts vary in elevation from level streets and blocks below grade of the freeway to steep hillsides rising 200' to 300' above freeway grade.

Population

The study area population is predominately white. The number of other racial stocks, although now a small percentage of total population, is increasing in and near the study area. About 20% of the population is foreign born. The highest representation is of Italian, Russian and Mexican. Russian and Mexican, both native and foreign born, tend to be concentrated in the northerly Potrero Hill District. Concentration of Italians, both native and foreign born, is highest in the Potrero Hill and Bernal Heights Districts, and lower in the Silver Terrace Area.

Occupation and Income

Blue collar occupations predominate in this area - Craftsmen, foremen, operatives and laborers are most

numerous and account for about 2/3 of the laboring force in the area. Incomes generally exceed slightly the city median of $3006.00 as shown in the 1950 census.

Zoning and Development

Present land uses include developed residential districts, commercial streets, factory sites and yards as well as open fields on steep slopes whose only access is winding dirt roads.

Reference to zoning map (See Map No. 4) provides visual representation of the diversity of uses found adjacent to and within the study area. Residential zoning is predominantly multiple-family. However, development has been mostly single-family residential. Single-family development predominates in the southerly sections of the study area. In the Potrero Hill District, single and multi-family uses are about equal.

Age and Condition

In general, this area can be described as an older, stable area of the city. Its zoning and development patterns have been set for years. Late Victorian and pre-1906 buildings abound. General condition of maintenance is average; some examples of outstandingly good maintenance, a few of downright decay.

Study Area Sections

The freeway through the study area was built in three successive construction projects between May 1949 and September 1955. The first section built was between

Army Street and Alemany Boulevard. After it was open to traffic, a northerly section was constructed between Seventeenth Street and Army Street. Last to be built was a section between Alemany Boulevard and Third Street.

Limits of the construction projects correspond with neighborhood limits. Due to the successive before and after time limits resulting from the successive construction projects, the study was divided into three sections numbered from north to south. These study sections and their neighborhoods are now discussed in more detail.

Section 1

The northerly, or Potrero Hill area, is level on the westerly side of the freeway and hilly on the easterly side. The area is predominantly zoned for multiple-residential use, with some zoning for commercial and light industrial uses. About half the existing residential development is multi-family; the balance single-family. Many streets are developed as neighborhood commercial strips, especially on the west side of the freeway (all east-west streets north of Army were designated for commercial use by the 1921 zoning ordinance). However, there are no major modern shopping centers. There is a fairly high incidence of light industrial uses near the Potrero Hill study area. The Potrero Hill district is one of the older neighborhoods in the city and contains many examples of construction which antedate the 1906 earthquake. Neighborhood

maintenance is average; signs of age abound but examples of downright delapidation are rare.

Section 2

Between Army Street and Alemany Boulevard, the east and west sides of the study area differ both in topography and development. The level east side is the Islais Creek industrial area which is bounded on the west by the freeway and on the east by the San Francisco Bay. It is zoned and fully developed industrially.

The hilly west side is primarily single-family residential; zoning is multi-residential. Many of the steep slopes are undeveloped. More than half the development within Bernal Heights including that in the study area pre-dates 1920. Maintenance is average to delapidated. In higher parts of the area, single and multi-residential development has recently taken place along with street improvements on formerly dirt roads. The comparative isolation of the neighborhood, and the large number of unsurfaced streets have contributed to its static quality and spotty development.

Section 3

West of the Freeway and south of Alemany, the generally hilly condition continues to the southerly study limit. East of the Freeway, the study area is hilly at the north and south and flat between.

Zoning and development are generally single-family residential. The major exception is a neighborhood shopping strip along San Bruno Avenue, the first city street west of the Freeway. Between Hale and Olmstead Streets, San Bruno Avenue is primarily commercial in character. Another exception is an industrial area on the east side just north of Paul Avenue. A high percentage of residences in this general area antedate 1920. Among the three sections, this most southerly one has experienced the largest amount of new home construction. Incidence of home ownership is fairly high; general maintenance tends toward average. Homes built since about 1920 follow the general city building pattern of closely built rows of housing with little street planting.

Study Methods

STUDY METHODS

The purpose of this study is to measure the effect of an urban freeway upon the value of adjacent residential property. Also to be considered are changes in use of adjacent properties resulting from the freeway influence.

Freeway effects upon property use are discussed in the "FINDINGS AND ANALYSIS" section of this report. Although the results are qualitative or observational, the answer to this question is adequate and, of course, highly related to the value change question.

THE METHODS IN GENERAL

The methods used to answer the value change question are "before and after" techniques. (The three methods used will each be discussed later). Measures of property value before freeway construction are subtracted from measures of "after" property value to obtain the absolute or dollar value changes. All changes were increases in value, as one would expect in the growing San Francisco Bay Area during the inflationary years since World War II.

Each dollar increase has been expressed in relative terms (percentage) by dividing the increase by the "before" measure of value.

Control Areas

The dollar and percentage increases were computed for the study area next to the freeway and for the control areas, removed from freeway proximity effect. Although the choice of control areas will be discussed later, their function will now be related to the study method.

Since the general rise in property values has been substantial during the 13 year study period, consideration of study area increases only would not provide a measure of freeway effect. Increase in values resulting from all non-freeway causes have been measured in carefully selected control areas. The freeway effect this study is seeking will emerge when the two area increases are compared. The amount by which the study area increase exceeds the control area increase will measure beneficial freeway effect or the amount by which it is less than the control area increase will measure detrimental freeway effect upon adjacent residential property values.

DATA COLLECTION

Basic data processed by the methods are sales prices of residential property in the study and control areas. The best value indicators are actual prices at which property sold under "fair market" conditions: a seller willing but not forced to sell and a buyer ready but not under pressure to buy, both buyer and seller acting in the open market with knowledge of market conditions and possible uses of the property.

All property transfers within the before and after time periods and within the study and control areas were searched out of San Francisco public records. The terms and conditions (including sales prices) of residential transfers were discovered, when possible, by interviews with persons having knowledge of the transfer; usually the grantor, the grantee

or both. Transfers which were not market sales were not included in the data processed in this study. For example, property trades, family transfers and forced sales were omitted because none of them produce "fair market" sales prices.

USE OF INTERNAL REVENUE STAMPS

In many cases it was not possible to find people able to furnish information on transfer terms and conditions. This was especially true of the early study years which go back in time as much as thirteen years.

Federal law requires a tax payment on property transfers. The evidence of payment is tax stamps affixed to the instrument of transfer. The amount of tax is based upon the value of the property transferred. Although these tax stamps sometimes indicate the value of the equity (total value less encumbrances) which has transferred, they often indicate the total property sales price. Among the transfers not confirmed by interviews with parties to the sale, the sales prices indicated by the tax stamps often were reasonable indications of the market sales prices. These sales prices were used with the confirmed prices to complete the fund of factual data processed in this study.

DESCRIPTION OF THE METHODS

There now follows a brief discription of the "before and after" methods used by this study. They will be discussed later in greater detail.

Method A

Method A could be called the mass average approach. Its

chief characteristic is that it uses all sales data of improved residential property in the study area. An accurate measure of value before freeway construction was obtained by averaging the "before" sales prices. An equally good measure of value after freeway construction was obtained by averaging the "after" sales prices. Each of these averages were unweighted arithmetic means: the sum of the sales prices divided by the number of sales. Control area sales prices were similarly processed to measure values at the same "before" and "after" dates.

Dollar (absolute) and percentage (relative) increases were computed from the "before" and "after" average values. Findings Table 5 located in the appendix shows the results of this method. A total of 784 sales were utilized: 518 in the study area and 266 in the control areas.

Method B

Method B is a repeat sale approach. It uses only a portion of the sales data used by Method A. The sample processed by Method B includes all parcels of improved residential property which sold in both the "before" and "after"periods and which remained physically unchanged between sales. The number of such parcels among the sales data totals 111: 65 in the study area and 46 in the control areas.

The dollar and percentage price changes were computed for each parcel. The number of months between the "before" sale and the "after" sale was also noted. The price changes of the parcels range widely because of the range of time in-

tervals between the "before" and the "after" sales. Time intervals range from 15 months to 144 months. Parcel price changes range from a decrease of 15% to an increase of 123%.

The "before" and "after"price change measured for each parcel indicates the rate of value change for the area in which it is located. Although each indicated rate of value change has little significance when considered individually, the rates are good indications of value change when considered as a group of all "repeat sales" - that is when they are averaged together. The average used is a "simple average": an unweighted arithmetic mean.

The average rate of value increase measured by this method could be expressed for any time period, such as dollars per year or percent per month. The findings shown by Method B have been expressed as dollar and percentage increases over the same time interval used for Method A. This makes it possible to directly compare the findings of the two methods. That is, both methods measure the same value increase (that of improved residential property) for the same length of time "before" and "after" the freeway.

Method C

This method was used to process the unimproved residential land data. In addition to the 784 sales of improved residential property utilized by Method A, data collection efforts uncovered 126 sales prices of vacant residential building sites: 70 in the study area and 56 in the control areas.

An appraisal approach was chosen as the most effective

method of processing vacant land sales data. Valuation dates before and after freeway construction were selected and typical residential building sites were appraised. In order to compare Method C measures of freeway-effect with those of improved property, the "before" and "after" valuation dates chosen were the same dates employed by Method A.

Dollar and percentage value increases were computed from the "before" and "after" building site values in the study and control areas. The results of this method are shown in Findings Table 5 located in the Appendix.

DISCUSSION OF METHODS

The three methods, previously explained briefly, are now analyzed and discussed in detail.

Method A

The study area sales data utilized by this method include all available sales prices of properties which transferred during the "before" freeway and the "after" freeway time periods. (Some study area properties have transferred more than once during the study period). These two groups of data are samples from two statistical populations which are a basic part of the theoretical model underlying Method A. The "before" population is all potential* sales prices of each improved residential property in the study area during the "before" period of time. The "after" population is all potential* sales prices of each improved residential property in the study area during the "after" period of time. (For clarity, Method A is discussed with reference to the study area. However, the same considerations apply to the control areas).

The "before" and "after"average prices of these theoretical populations are the "before" and "after" value-levels this study is attempting to measure. The "before" and "after" average prices computed from the sale price samples are the best obtainable measures of these "population" value-levels. The degree to which a sample average accurately measures its population average depends upon the degree to

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* -- Potential in the sense that the population includes the unlimited number of sales which might have but did not occur.

which the sample data is a representative cross section of its population. For example, sample sales prices during the "before" period should be a representative cross section of all potential sales prices of each improved residential property in the study area during the "before" years.

The data processed were carefully evaluated to assure that the samples were in fact a representative cross section of their populations. Sales which would unbalance the sample were eliminated as unrepresentative. For example, one of the sales in the study area after freeway construction was a $90,000.00 apartment house. This is about twice as high as the next highest price among the sales data. It was not included among the sample data processed in this study. If if had been included, the "after" sample would not have been a representative cross section of its population and the "before" and "after" comparison would have shown a greater study area value-increase than actually occurred.

The degree to which a sample average accurately measures a population average is influenced by the number of sales in the sample. A larger sample will result in a more accurate measure of value-level. The samples utilized by Method A are large enough to produce results which meet the accuracy requirements of this study. The contribution of Method A to the total fund of factual findings would not have been significantly greater had additional sales data been available.

Details of Method A. The freeway through the study area was built in three successive construction projects between May 1949 and September 1955. The portions of study area within the project limits are called study sections and are numbered from north to south. (See the map of the Study Area located in the appendix).

"Before" freeway and "after" freeway time periods were defined for each study section. These periods and their relationship to the periods of freeway construction can be seen by comparing the following tables.

Time Periods of Freeway Construction

Study Section	Construction Began	Freeway Opened
1	March 1952	October 1953
2	May 1949	August 1951
3	May 1953	September 1955

Study Time Periods

Study Section	"Before"	"After"
1	January 1948 to July 1953	July 1953 to July 1959
2	July 1946 to July 1951	July 1951 to July 1955
3	July 1949 to July 1953	July 1953 to July 1959

Sales price history in each study section was compiled for as long a period of time before freeway construction as was necessary to furnish a meaningful measure of the "before" value of property in that section. The practical consideration of finding persons with knowledge of sale terms was influential in limiting the earliest time limit (July 1946).

Section 2 is the study section through which the earliest freeway project was constructed. Sales price history in Section 2 was compiled for about three years before freeway construction began. Sales price history in Sections 1 and 3 was compiled for about four years before freeway construction began.

For each study section, the division date between the "before" and "after" periods is during the period of freeway construction through that study section. The division date for Sections 1 and 3 is July 1953; for Section 2, July 1951. The division date for each section was selected so that the "before" and "after" samples of sales prices would each best represent their populations. The resulting numbers of sales in each time period was a consideration in selecting the division date. The ultimate purpose of these considerations is to insure that each sample mean will be the best possible measure of its population mean. When this is true of both time periods, the "before" and "after" measures of value change will be as meaningful as possible.

The "before" and "after" average sales prices are averages in two senses. In addition to averaging the dollar prices, Method A averages the time period in which the prices occur.The effective date with which an average price is associated is the average or midpoint date of the time period used to group the sales prices. In each section, the effective "before" and "after" dates are the midpoints of the two time

periods. The following table shows these dates for each study section.

Midpoint or "Effective" Dates

Study Section	"Before"	"After"
1	October 1950	July 1956
2	January 1949	July 1953
3	July 1951	July 1956

The "before" sales prices were first added within study sections using the "before" time limits applicable to each section. The three total prices were then added to get the grand total of all "before" prices in the study area. This sum was then divided by the total number of study area "before" sales to compute the average sales price. The same process for "after" sales prices resulted in the "after" average sales price. These two sample averages are the previously discussed measures of "before" and "after" value which Method A uses to compute value change.

Method B

The main reason for using this repeat sale approach is that its measure of freeway effect is largely independent of Method A. As compared with Method A, it has advantages and disadvantages.

Each Method B property sold under market conditions in both the "before" and "after" periods. The number of properties which meet this requirement is obviously less than the number of sales used by Method A, where all sales prices were processed. The disadvantage of smaller sample size is

compensated for by the advantageous "before" and "after" matching of sales prices. This matching makes it unnecessary for Method B to resolve some of the divergent factors which Method A must resolve. (Method A "after" sales were mostly of different properties than the "before" sales).

The statistical population implied by Method B consists of a finite number of elements: The "Before" and "After" value-changes of all improved residential parcels in the study area. (For clarity, the method is discussed with reference to the study area. However, the same considerations apply to the control areas). Method B implies only one statistical population in the study area. Method A implies two "populations": All potential sales prices during the "before" period and all potential prices during the "after" period. The two methods operating ideally upon a changeless study area would result in the same measure of value change. (This relationship is discussed later in the "Comparison of Methods" section of this report). Because Method A involves twice as many sampling situations as Method B, it requires much more sales data than Method B to produce results of equivalent accuracy. Considering the sample sizes encountered in this study, the two methods furnish equally reliable answers to the freeway-effect question.

Details of Method B. Price changes in dollar and percentage terms were computed for each "repeat sale" parcel. The number of months between the "before" and "after" sales was

also noted. The division dates between the "before" and "after" periods were the same dates defined for each study section by Method A. This was done so that findings of the two methods would be comparable.

The rates of price change were computed for each parcel by dividing the dollar and percentage price changes by the number of months between the "before" and "after" sales.

These rates of price change were averaged in each study section. The average is an unweighted arithmetic mean: The sum of the parcel rates divided by the number of parcels.

The "repeat sale" data was first processed within study sections in a way which makes Method B comparable with Method A. (In a later step the section findings were combined to furnish Method B results for the whole study area).

Method A treatment of Study Section One involves "before" and "after" time periods and consequent effective dates at the midpoints of each time period. These effective or average dates "before" and "after" the freeway are the points in time associated with Method A "before" and "after" average values. The time interval between the effective "before" date and the effective "after" date used by Method A is the number of months used to convert the Method B monthly rate of value increase to a "before" and "after" rate of value increase which is comparable to Method A. (For clarity, Study Section One only is now discussed. The same procedure was used with the other two study sections). In the case of Study Section One the time interval between the

Method A "before" average value and its "after" average value is 69 months. In order to make the Method B measure of value increase comparable with the Method A measure for Study Section One, the monthly rate of value increase indicated by Method B for Section One was multiplied by 69 months. The measures of increase by both methods are therefore associated with the same "before" and "after" time period.

Method B monthly increase rates for Study Sections 2 and 3 were converted in the same way to make them comparable to Method A "before" and "after" increases. The time intervals between the "before" and "after" average value dates are 54 and 60 months for Sections 2 and 3, respectively.

The value increases measured by Method B for each study section were then combined to furnish the value increase measure for whole study area. This was done by use of a weighted average of the section increases. The weight used for each section increase was a measure of the physical size of its study section. Weights based on size were chosen as the fairest measure of the relative importance of each study section to the whole study area. These weights are 110, 44 and 113 for Sections 1, 2 and 3, respectively. As can be seen on the study area map in the appendix, the study sections differ in length. After the San Bruno Avenue neighborhood shopping strip has been omitted from Section 3, Sections 1 and 3 are about the same size. Section 2 is much smaller for two reasons. In addition to being

shorter, Section 2 is residential in use on only the west side of the freeway.(Sections 1 and 3 are residential on both sides).

"Repeat Sales" in the control areas were processed in the same way so as to furnish an accurate measure of freeway effect when compared with results from the study area "repeat sales".

METHOD C

Simple statistical procedures, such as Methods A and B, are not capable of extracting meaningful answers from the relatively limited amount of vacant land sales data. The number and range of variables characteristic of the sites studied require either of two circumstances for successful statistical treatment: Either a greatly augmented fund of sales data treated by easily understood statistical methods or the application of advanced statistical methods (combined with considerable appraisal judgment) to the available fund of sales data. Among the "number of variables" are topography and the availability of public facilities such as paved streets. The difference in topography, between flat and very steep, is an example of the "range" of a variable.

The most meaningful and feasible way to process the land data is by use of accepted appraisal procedures rather than any statistical technique. Method C is an appraisal approach to the freeway-effect question. This choice of method contributes to the effectiveness of the entire study because an appraisal approach is independent of and supplementary to the two statistical approaches.

Typical residential building sites in the study and control areas were appraised. The valuation dates used were the same "before" and "after" effective dates employed by Method A for improved residential property. The measures of freeway-effect resulting from Method C are, therefore, comparable with those resulting from Methods A and B. (This is true even though Method C value increases are smaller than improved residential property value increases. This is discussed in the "FINDINGS AND ANALYSIS" section of this report under "Analysis of Findings Table 1".)

In the same manner as Method A, value increases in dollar and percentage terms were computed from the "before" and "after" value-levels appraised. This was done in the same way for both study and control areas so that their difference would be a measure of freeway effect.

COMPARISON OF METHODS

All three methods were designed to measure the same freeway effect when study area and control areas are compared. Each method is equally capable of accomplishing this. As discussed in the "FINDINGS AND ANALYSIS" section, the data processed by the methods vary somewhat in their measuring effectiveness.

Methods A and B deal with improved residential property. In a changeless study area, they measure the same "before" and "after" value change. Since the freeway-adjacent area and the control areas are characterized by relative changelessness, these two methods may be employed and their findings compared. In a

dynamic area the methods could be expected to measure two different concepts of value change.

Method A can be descriptively called the "community viewpoint". It measures the total value change of all residential property in each area. This concept of value change includes two elements: The value change of properties existing throughout the time period studied with no physical change (no new capital investment and no losses); and the value change in the area studied because of new capital investment, such as new buildings of higher-than-average value on formerly vacant lots and additions to or major improvement of existing buildings.

By contrast, Method B includes only the first of the two elements with which Method A is concerned: Value changes of existing properties. This concept of value-change can be descriptively called the "property owners viewpoint".

In a developing area or one characterized by changes to more profitable property uses, Method A would measure the greater community-wide value increase and Method B would measure the more limited existing property value increase (which may partially benefit indirectly from the former value increase). Ideally, the difference between the two would be a measure of value-increases due to net additional capital investment.

CONTROL AREAS

Since the function of control areas has been thoroughly discussed, it is not repeated here. (See "Study Methods" in the "SUMMARY AND CONCLUSIONS" section.) Their selection and analysis are now explained.

In order to serve their purpose, the control areas have been carefully chosen to resemble the study area in all respects except for the presence of the freeway. The three control areas, when considered together, are closely comparable to the study area. Map 1 in the appendix shows the location of the study and control areas.

A suitable single control area was not available. Three areas were chosen so that, when combined, the cross-section of physical and economic factors closely matched that of the study area. Some of the factors considered in the selection follow:

1. The proportions of land uses and zoning.
2. Age, size and condition of the residences.
3. Availability of public improvements, such as, streets, sidewalks and utilities.
4. Travel time to employment and shopping centers.
5. Accessibility, including availability of public transportation
6. Characteristics of the residents, such as, income level and nationality.
7. Convenience of neighborhood facilities, such as, schools, churches and parks.

In addition to the above factors, the study and control area residences are similar in their general price level. This is necessary for meaningful comparisons of value-increases, especially those in percentage terms.

Control area sales data was processed in the same manner as study area data. The preceding description of study methods applies to both areas. Consequently, the control area furnishes comparable measures of the net effect of all non-freeway value influences, and is a satisfactory basis of comparison with the study area.

Findings and Analysis

FINDINGS AND ANALYSIS

The results of Methods A, B and C are shown in Findings Table 1 below. This table shows three independent pairs of measures of freeway effect upon adjacent residential property value. The three "before and after" freeway effects are expressed in terms of both dollars and percentage.

Findings Table 1*	Value Increases of Residential Property					
	Improved Residential				Vacant Sites	
	Method A		Method B		Method C	
	$	%	$	%	$	%
Study Area	2620	29	2090	23	650	38
Control Area	1575	16	2030	23	500	32
Freeway Effect**	+$1045	+13%	+$ 60	0%	+$150	+ 6%

---

* For supplementary data see Findings Table 5 located in the Appendix.

** Freeway effect is Study Area increase less Control Area increase.

ANALYSIS OF FINDINGS TABLE 1

Differences between value increases of vacant land and improved property are significant. The meaning of the differences, in both dollar and percentage terms, is a worthwhile sidelight to the central interest of this study. Their significance is explained after the freeway-effect question is analyzed. (See the following section relating Method C with Methods A and B).

Although the value increases measured by the three methods can be compared only with reference to additional theoretical considerations, the three pairs of freeway-effect measures are directly comparable. As far as the methods themselves are concerned, each percentage freeway effect and each dollar freeway effect is an equally good measure of the proximity effect this study is seeking. The additional considerations of differences in Method are cancelled out by the subtraction of control area results from study area results. This is due to the fact that the value increase differences apply equally to each area.

The degree to which each measure of freeway effect is a valid indication of the actual freeway effect is a function of two things: The reliability of the method and the representativeness of the sales data processed by the method. Although the three methods are equally capable of producing a satisfactory answer, the data processed by each method in each area are not equally representative.

Method A value increase measures for the control area are slightly lower than can reasonably be expected. They could be underestimated by amounts which are not likely to exceed $800.00 and 9%. The other measures of value increase are well within reasonable limits of accuracy.

If the control area value increases by Method A are actually a little higher than measured, the actual freeway effect will be a smaller beneficial effect than measured. Since the Method A study area value increases are reliable measures, the difference between areas (i.e., the freeway effect) will have about the same degree of accuracy as the control area value increases: Within about $800.00 and 9%.

The most likely explanation for the sizable Method A freeway benefit (13%) is a slight lack of comparability between study and control areas. The study area contains a slightly higher proportion of multiple-family residences than does the control area. As shown later in this findings section, multiple-family property increased a little more in value than did single-family property. The effect of such an imbalance would be a tendency to somewhat overestimate the beneficial effect of the freeway. In the absence of this small bias, Method A results would probably have been similar to Method B and C results.

Freeway-Effect Conclusions

Method A results have been almost disregarded when processing Findings Table 1 to a single measure of freeway effect. The only influence of the Method A results (when property analyzed) is to support in a general way the findings of the other two methods.

The most reliable measure of the effect of the freeway upon study area residential property value is a positive or beneficial 3%; the average of Methods B and C. In other words, residential property next to the freeway has increased an average of 3% more in value than it would have if no freeway had been constructed.

Beneficial freeway effects are readily understandable when the adjacent properties are used for certain non-residential purposes, such as industrial uses. Benefits are frequently relatively easy to explain. Accessibility and advertising value are often mentioned factors.

Beneficial freeway effects upon residential property value are not easily understandable or readily explainable. An advantage the study area has over the control area is accessibility to the freeway and hence convenient transportation. However, the study area is subject to more traffic noice than the control area. Accessibility seems to be a factor of more importance to apartment dwellers than traffic noise. However, home owners outnumber apartment

dwellers in the study area and the relative significance of these two factors to home owners has not been determined.

The most reasonable or expected answer is that the study and control areas would increase in value by about the same amount. In other words, established and stable neighborhoods in the developed and aging study area would not be expected to experience any appreciable value changes as a result of freeway construction. Three possible explanations for the indicated 3% benefit should be listed before reaching a conclusion:

1. Post-freeway buyer anticipation of a potentially more profitable land use near the freeway. Advertising signs are legal in a small percentage of the residential study area. In addition to many advertising structures on non-residential property, a few such signboards are located upon residential properties.
2. Possible slight depression of the "before" prices (and consequent overestimation of the study area value increase) due to unduly pessimistic, uninformed sellers. They may have accepted somewhat low prices because of their fears of adverse freeway effect.

3. Possible small chance variations in the data and the methods.

The conclusion or judgment of residential freeway effect should weigh the 3% beneficial measurement with these three considerations. An entirely fair conclusion is that the freeway has had little or no effect upon the value of residential property within 200 feet of its right of limit.

Method C Value Increases Compared with Those of Methods A and B.

Methods A and B dollar increases in the study and control areas measure the same thing: Value increases in terms of dollars of improved residential property. Method C dollar increases for each area measure something else: Value increases in terms of dollars of vacant residential building sites. Prices of improved residential properties include two items: Land value and improvement value. Land value and its increase is only a fraction of total value and its increase. Therefore, study area value increases of $2,620.00 and $2,090.00 shown by Methods A and B compare with each other but not with the $650.00 increase shown by Method C. One would expect the $650.00 vacant land increase to be a fraction of the other two. Likewise, the increases of $1,575.00 and $2,030.00 shown by Methods A and B for the control area are theoretically comparable with each other but not with the $500.00 increase shown by Method C.

The percentage increase distinction between vacant and improved residential property has a different significance. A percentage statistic is a "pure" or relative number. Therefore, the percentage increases are relatively independent of the differing dollar levels of value. (As compared with value increase of vacant land, the greater dollar increase for improved property is divided by the higher level of improved property value). Differences in percentage (or relative) increase between improved and vacant property can be explained in terms of changes in land use within both the study and control areas.

The measures for each area by Method C (vacant land) are 38% and 32% for the study and control areas respectively. Methods A and B (improved) show study area increases of 29% and 23%, respectively. Method B indicates a control area increase of 23%. (As discussed previously, the 16% Method A increase for the control area is probably slightly lower than the actual increase. It has been omitted from present considerations).

Findings Table 2 shows study and control area value increases for vacant residential building sites and improved residential property. The increase figure used for study area improved residential property is the average of the Method A and B results: 29% and 23%, respectively. The table also shows the amount by which vacant land increases exceeded value increases of improved residential property.

Findings Table 2	Percentage Value Increases	
	Study Area	Control Area
Vacant Residential	38%	32%
Improved Residential	26%	23%
Difference	12%	9%

Although 3% difference between study and control area differences (12% and 9%, respectively) is nominal and probably insignificant, the difference between vacant and improved residential property, amounting to about 10%, is meaningful. Percentage land value increases which exceed improved property increases are not unexpected in residential neighborhoods such as those found in the study and control areas. The residential character is gradually changing to a more intensive or higher density development which makes the use of residential land more profitable and hence more valuable. Such value increases are reflected immediately in sales prices of vacant land. Improved residential property, on the other hand, is more committed to its present use (and intensity of use) because the existing investment in buildings cannot usually be readily changed to take advantage of the more profitable potential use.

TIER DISTINCTION

Findings Table 3 shows the dollar and percentage

value increases of the two tiers in the study area and the amounts by which Tier One increased more than Tier Two.

Findings Table 3*	Value Increases of Residential Property					
	Improved Residential				Vacant Sites	
	Method A		Method B		Method C	
	$	%	$	%	$	%
Tier One	2693	30	2468	29	650	38
Tier Two	2572	29	1963	20	650	38
Difference	+$ 121	+ 1%	+$ 505	+ 9%	$ 0	0%

* For supplementary data, see Findings Table 6 located in the Appendix.

Analysis of Findings Table 3

When Tier One is compared with Tier Two, Tier Two is, in effect, a type of control area or basis of comparing freeway proximity effect, Any such effect would be more pronounced in Tier One (which abuts the freeway itself) than in Tier Two (which is separated from the freeway by Tier One). Therefore, a comparison of the two tiers should point the direction of proximity effects. However, resulting differences could only partially measure the effect, since Tier Two is itself influenced by the effect measured.

As discussed above in connection with Findings Table 1, the differences in value increases (in both tiers) between vacant residential sites and improved residential property is significant. The differences indicated for both dollar and percentage increases have been explained in the analysis of Findings Table 1. The same explanation applies to this table.

As previously discussed, each method is equally capable of measuring the value increases. The sales data samples which these methods process are not equally representative of their statistical populations. In the case of Findings Table 3, Tier One increases, as measured by Method B, are probably higher than actually existed. As a result, this measure should be weighted lightly when evaluating the increases shown by Findings Table 3. The other measures are reasonably accurate.

The comparison of tiers has been accomplished for each method by subtracting tier two increases from increases indicated for tier one. The three dollar differences are plus $121, plus $505 and zero dollars for Methods A, B and C, respectively. Percentage differences are plus 1%, plus 9% and 0% in the same order. These nominal differences, amounting to about 2%, substantiate the findings of freeway effect reported in the analysis of Findings Table 1: The freeway has had little or no

effect upon the value of adjacent residential property.

SINGLE-FAMILY COMPARED WITH MULTI-RESIDENTIAL PROPERTY

Improved residential property in the study area has been tabulated to show the value change differences between single-family residential property and multiple-family residential property. Findings Table 4 shows value increases of the two property uses as measured by the two methods used for improved residential property. The amounts by which multi-residential increases exceeded single-family increases are shown on the final line called "difference."

Findings Table 4*	Value Increases of Study Area Improved Residential Property			
	Method A		Method B	
	$	%	$	%
Multi-family Residential	4,167	36	3,957	34
Single-family Residential	2,016	24	1,587	20
Difference	2,151	12	2,370	14

* For supplementary data, see Findings Table 7 located in the appendix.

Analysis of Findings Table 4

Within the study area, "before and after" value increases of improved multiple-family residential property exceeded the increases of single-family property by about 13%.

This result is reasonable because most of the study area is gradually changing to a higher density residential use. Existing multiple-residential buildings would not suffer as much relative obsolescence due to this use-change as would single-family residences.

DISCUSSION OF CHANGES IN PROPERTY USE

At this time the matter of change in use will be discussed and related to the freeway. While processing the sales data used to answer the value-change question, the study area was thoroughly inspected and its history during the study years was carefully reviewed. As a result, a good, qualitative answer to the use-change question is possible without additional steps required.

Two of the most important characteristics of the study area are its stability and the relative completeness of its development. The pattern of land use has been established for many years and the City has allowed few changes in zoning.

The property uses existing during the study years have undergone little change. This is true of change in the boundaries of use and the intensity of use. Change in the boundaries of the various property uses is overshadowed by the general changelessness of the study area and its vicinity. Refer to Map 4 in the appendix, which shows the zoning and use pattern in and near the study area.

The study area and vicinity have been relatively well-developed for many years. The proportion of properties which have been vacant is small. However, the intensity of use has been moderate.

The study area neighborhoods are predominately residential. Although the northerly portion of the study area is somewhat more intensely developed than the remainder, the entire study area can be classified as medium-density residential

As the San Francisco Bay Area grows, the desirability for apartment buildings of "close-in" neighborhoods increases. The proportion of multiple-family uses in the neighborhoods studied has gradually increased. This fact may explain the greater value increases of vacant residential building sites over improved residential property. It also may explain the greater value increases of multiple-family residences as compared with single-family.

Freeway-Effect

The freeway has had practically no effect upon neighborhood use-patterns. Few changes of use have occurred, for any reason. Very few can be attributed to the freeway. Two examples, however, illustrate these atypical situations.

A gasoline service station site was created at openings to the traveled freeway lanes. Improved residential properties opposite the on and off ramps were purchased by a major oil company. The improvements were removed and a

service station subsequently built, which has since operated successfully.

A second example is a change to a less profitable use. A gasoline service station site improved with a successfully operated station before freeway construction was reduced to a marginal commercial or a residential site and is now vacant. The site was previously at the corner of two heavily traveled streets. Since freeway construction, it is served by a little-used frontage road which is less convenient to reach.

APPENDIX

Tables of Findings

FINDINGS TABLE 5

Residential Property Values and Value Increases

Method A	All Sales of Improved Residential Property					
	Before		After		Average Increases	
	Average Values	No. of Sales	Average Values	No. of Sales	Dollar	Per Cent
Study Area	$8,981.	229	$11,601.	289	$2,620.	29%
Control Area	9,564	119	11,139.	147	1,575.	16%
Method B	Improved Residential Repeat Sales Number of Parcels					
Study Area	65				2,090.	23%
Control Area	46				2,030.	23%
Method C	Vacant Residential Sites					
	Before Appraisal		After Appraisal			
Study Area	$1,700.		$2,350.		$ 650.	38%
Control Area	1,550.		2,050		500.	32%

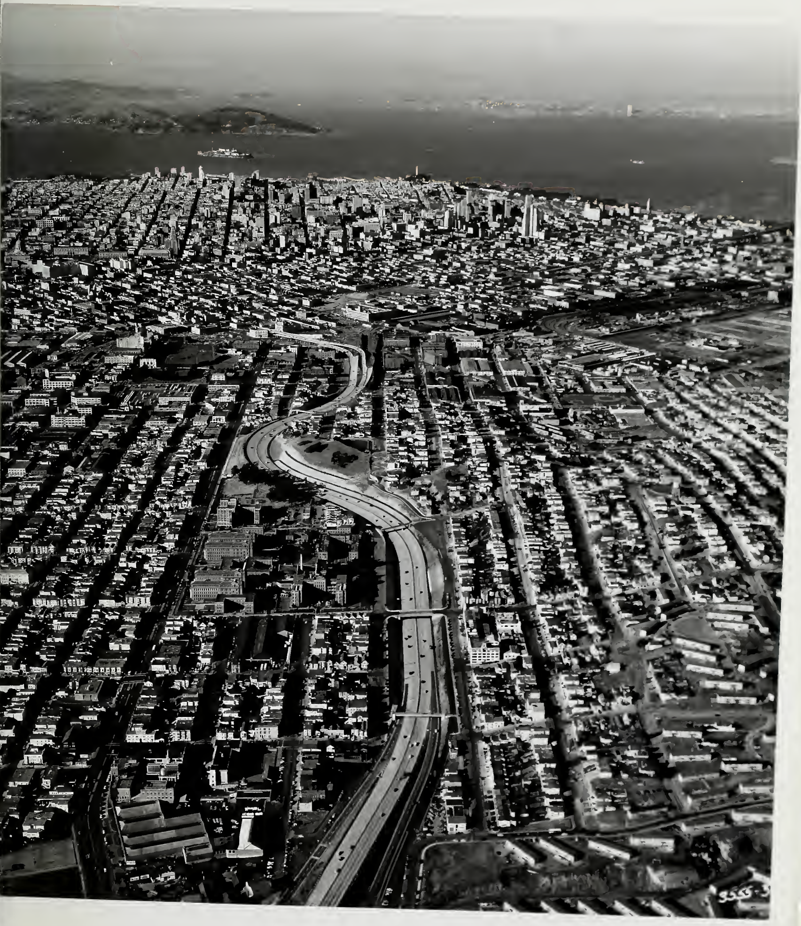
FINDINGS TABLE 6

	Residential Property Values and Value Increases					
Method A	All Sales of Improved Residential Property					
	Before		After		Average Increases	
	Average Values	No. of Sales	Average Values	No. of Sales	Dollar	Percent
Tier One	$8,925	89	$11,618	116	$2,693	30%
Tier Two	9,017	140	11,589	173	2,572	29%
Method B	Improved Residential Repeat Sales Number of Parcels					
Tier One	20				$2,468	29%
Tier Two	45				1,963	20%
Method C	Vacant Residential Sites					
	Before Appraisal		After Appraisal			
Tier One	$1,700		$2,350		$ 650	38%
Tier Two	1,700		2,350		650	38%

FINDINGS TABLE 7

Study Area	Improved Residential Values and Value Increases					
Method A	All Sales of Improved Residential Property					
	Before		After		Average Increases	
	Average Values	No. of Sales	Average Values	No. of Sales	Dollar	Percent
Multi-family Residential	$11,701	46	$15,868	67	$4,167	36%
Single-family Residential	8,297	183	10,313	222	2,016	24%
Method B	Improved Residential Repeat Sales					
	Number of Parcels					
Multi-family Residential	12				$3,957	34%
Single-family Residential	53				1,587	20%

Photographs



10/2/53 3555-3

IV S F

View of Bayshore Fwy
Completed section looking
northerly from Army St.

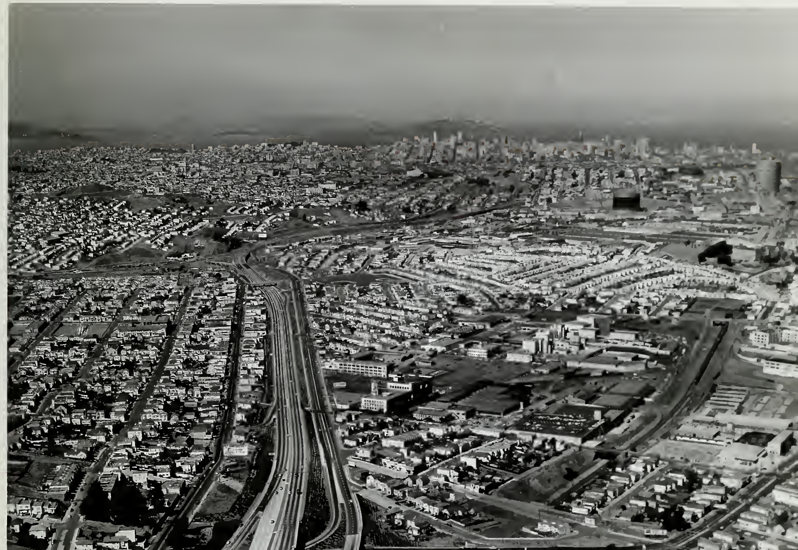
A bird's-eye view of the Freeway in Section 1 looking north to downtown San Francisco. This picture was taken in 1953, shortly after completion of construction. The hilly part of the Potrero District is east of the Freeway. The wide street which runs somewhat diagonally from the lower left corner about three blocks west of the Freeway is Potrero Avenue, the former through route.

7/10/56 5002-4

IV SF
Alemany Blvd exit on
Bayshore Fwy looking N.

Another bird's-eye view of the Freeway in Section 2 looking toward downtown San Francisco. This picture was taken shortly after completion of construction.

The structure shown in the lower part of the picture is the former Alemany Circle, which is now incorporated into the expanded Alemany Interchange. The dark area on the left of the photo is Bernal Heights; the level area opposite is the Islais Creek Industrial District.


5680-

9/20/57 5680-1

IV SF

Looking N along Bayshore Fwy from 3rd St. Int.

his view of Section 3 was taken in 1957. It looks north from the ntersection of Third Street with the Freeway. The large buildings iddle right of photo) are part of a fairly large industrial area, a orner of which lies within the study area.

STUDY AREA

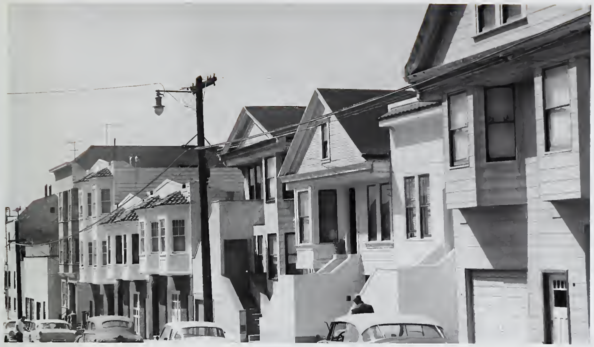
SECTION ONE

A hilly residential street. Another tier of similar residences separates those shown from the freeway.

Tier one houses. A fairly well maintained but drab-looking area. Freeway lies opposite and above grade of this street.

STUDY AREA

SECTION ONE



Tier one frontage street. These structures overlook the freeway. A good example of the mixed residential development typical of section one.

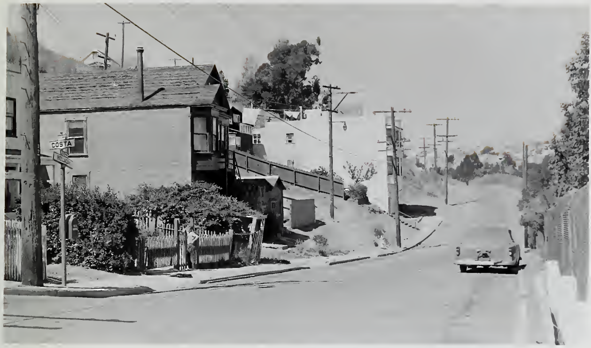
STUDY AREA

SECTION TWO

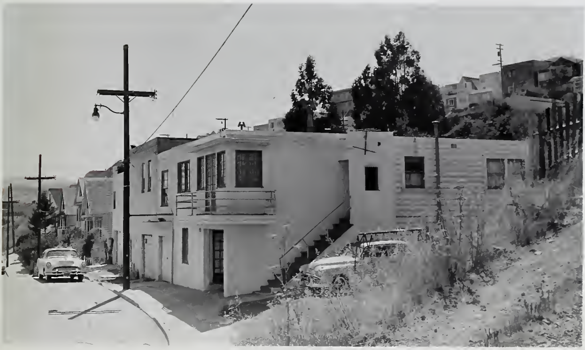
HOLLADAY
PERALTA

An older street; these Tier Two houses are about 100 feet above the freeway.

A good example of a new street. Development of this type is presently taking place, generally outside the study area on upper Bernal Heights slopes.



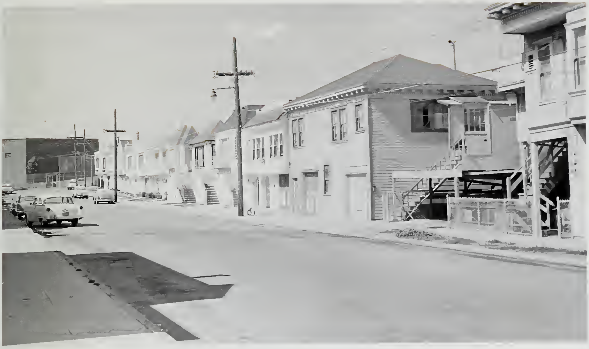
Frontage street above and west of the freeway. Note steep vacant slopes as well as the different age of the houses.



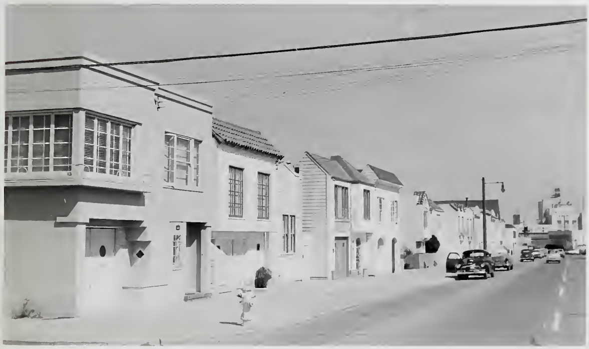
Another view of this frontage street.

STUDY AREA

SECTION THREE



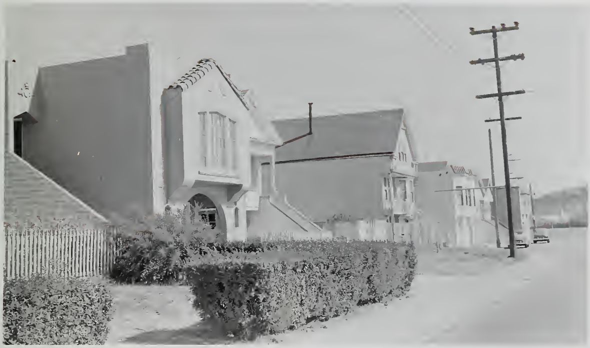
Tier Two easterly of freeway. This is an area with a higher percentage of newer houses, especially outside the study area.



Tier Two residential street. There is some older construction here. Notice the proximity of industrial use at the end of the street.

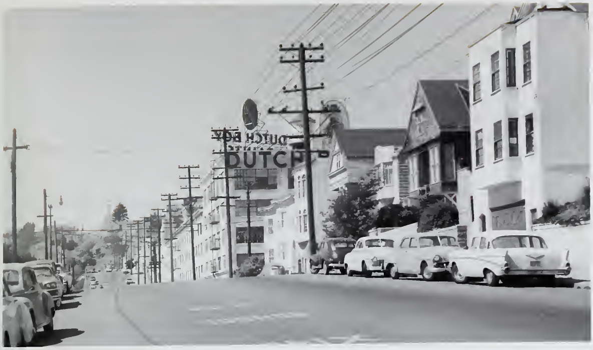
STUDY AREA

SECTION THREE

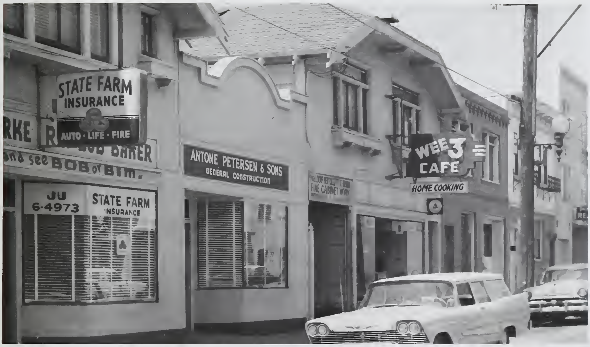


Tier Two looking toward the Freeway

NON RESIDENTIAL USES

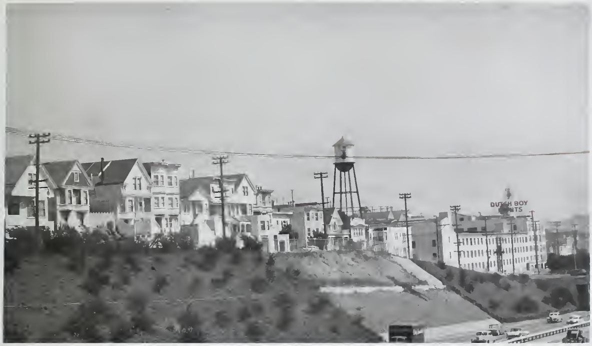

DUTCH BOY
DUTCH

Northeast Study Area.
Notice proximity of different uses: Single and multi-family residential as well as industrial. These properties face the freeway which lies on the left below this frontage road.

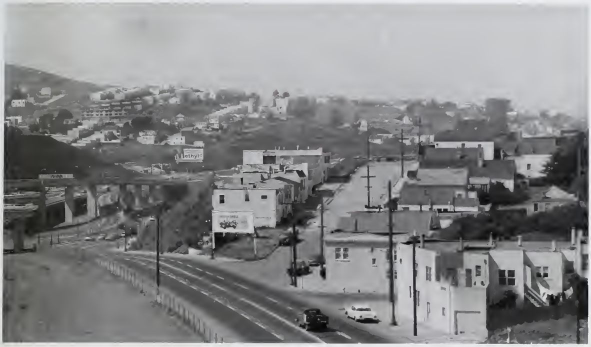

STATE FARM INSURANCE
AUTO · LIFE · FIRE
RKE
BAKER
and see BOB or BIM
JU 6-4973
STATE FARM INSURANCE
ANTONE PETERSEN & SONS
GENERAL CONSTRUCTION
FINE CABINET WORK
WEE 3 CAFE
HOME COOKING

Southwest Study Area.
Typical view of the San Bruno Avenue neighborhood shopping strip. These properties face the freeway but are separated from it by the street and another tier of similar properties.

PHOTOS WHICH SHOW RELATION OF STUDY AREA TO THE FREEWAY



This depressed portion of the freeway is in Section One.



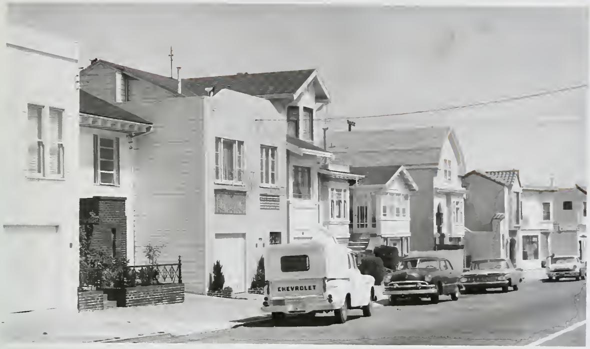
The freeway at left is approximately at grade of adjacent frontage street. Interchange at left was built after time limit of study.

CONTROL AREA

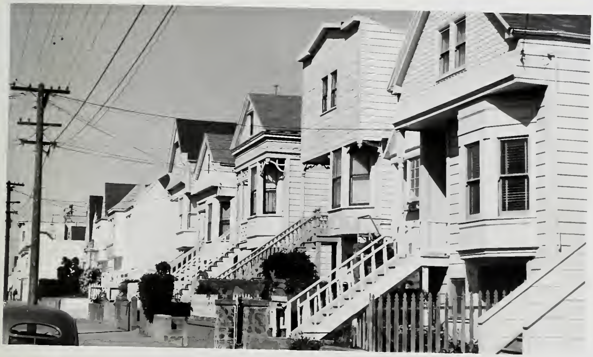
An example of a street on which nearly all houses are fairly well maintained middle life structures.

Newer control area street.

CONTROL AREA



An example of a street with structures of various ages and uses.



A street with a high percentage of older residences.

Maps

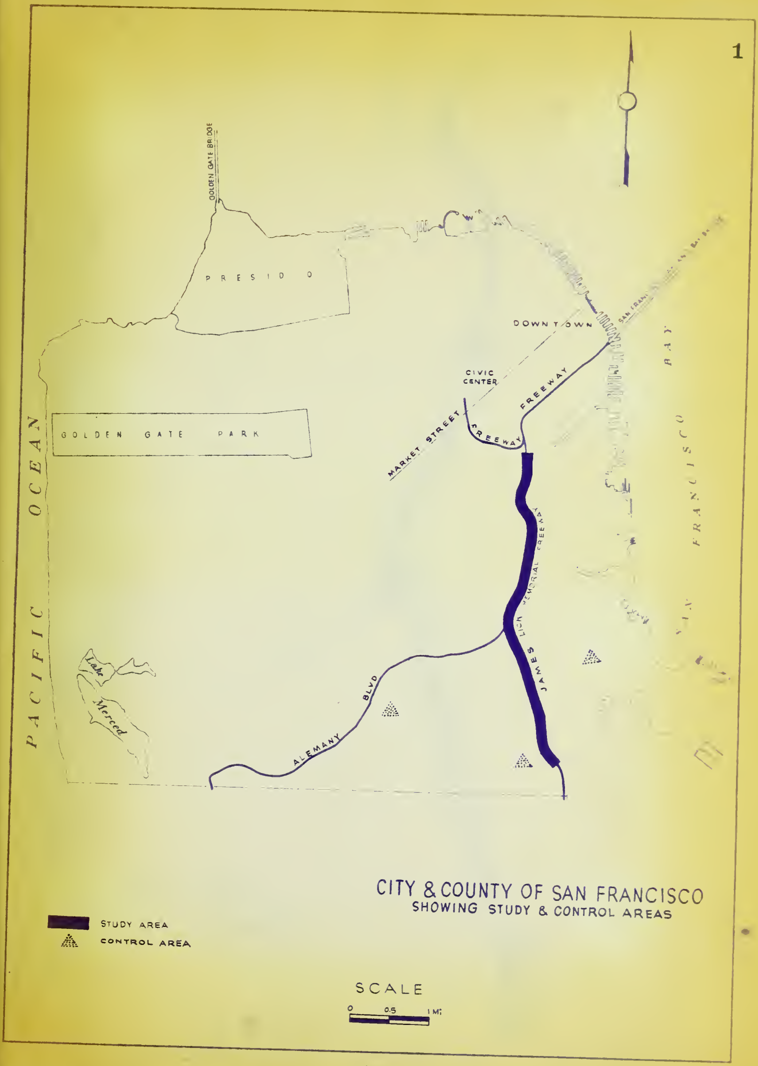
San Francisco and the Control Areas

The Study Area

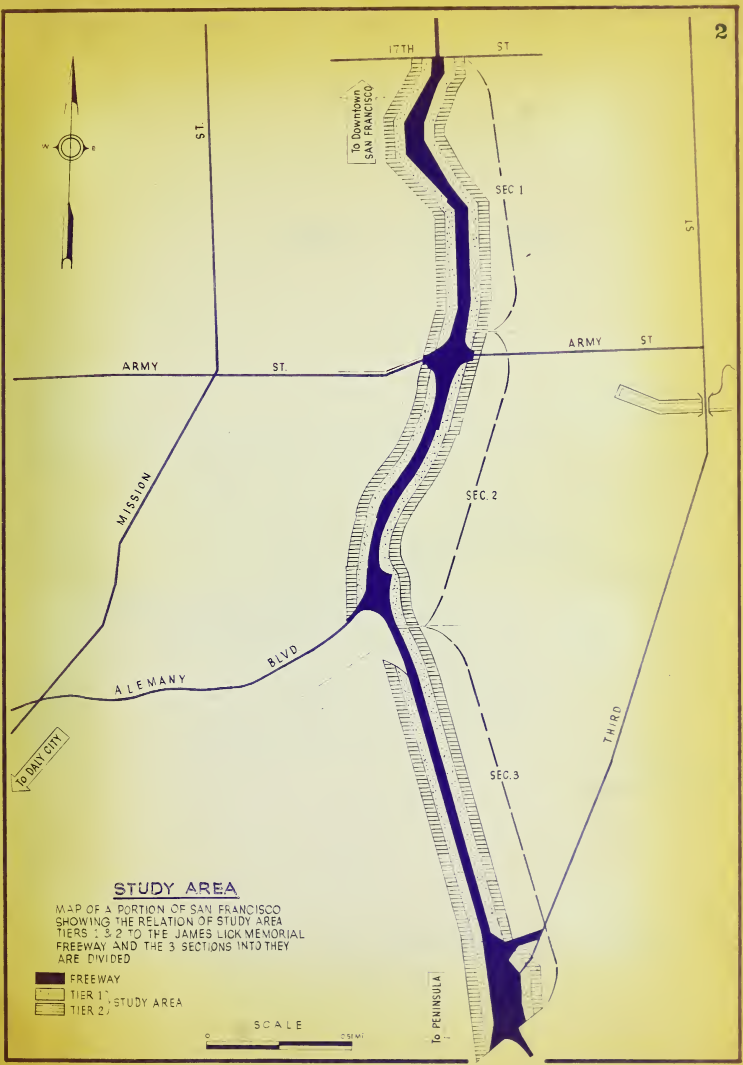
The Freeway and Vicinity

Zoning in and near the Study Area

1

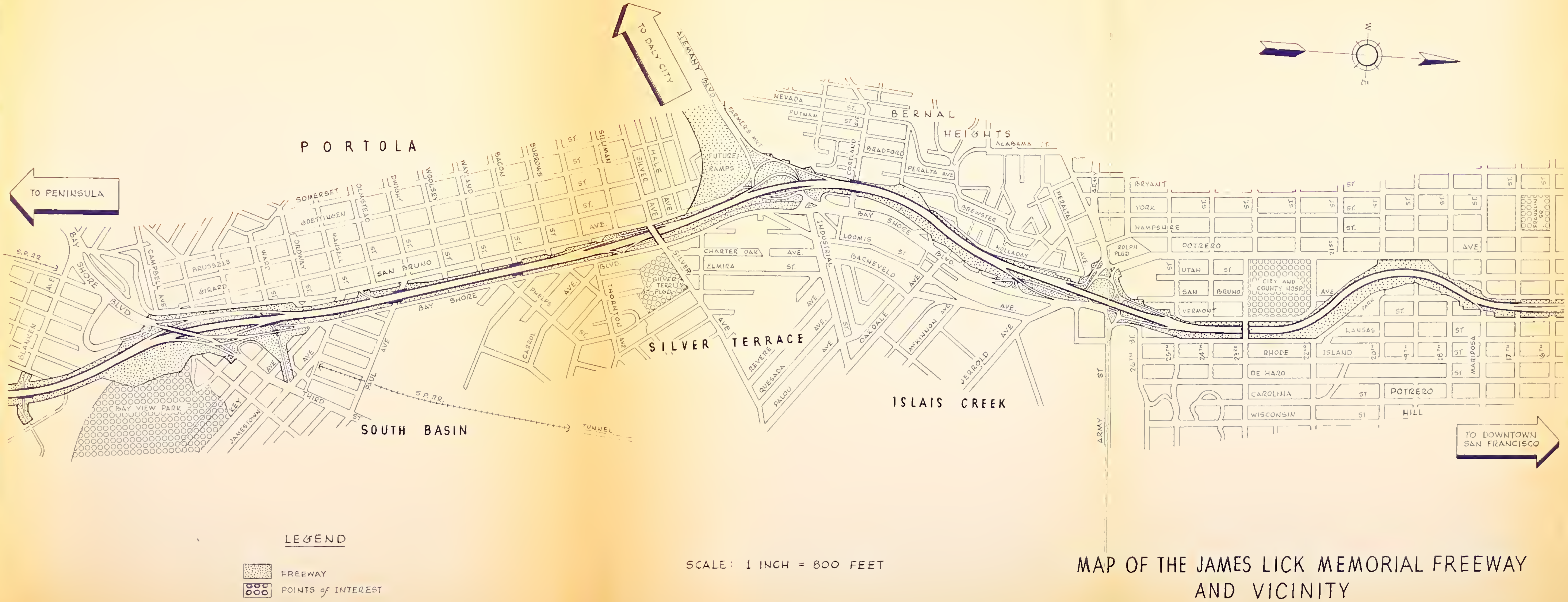

GOLDEN GATE BRIDGE
PRESIDIO
DOWNTOWN
SAN FRANCISCO BAY BRIDGE
CIVIC CENTER
MARKET STREET
FREEWAY
FREEWAY
GOLDEN GATE PARK
PACIFIC OCEAN
SAN FRANCISCO BAY
JAMES LICK MEMORIAL FREEWAY
ALEMANY BLVD
Lake Merced
STUDY AREA
CONTROL AREA
SCALE
0
0.5
1 MI.

CITY & COUNTY OF SAN FRANCISCO
SHOWING STUDY & CONTROL AREAS

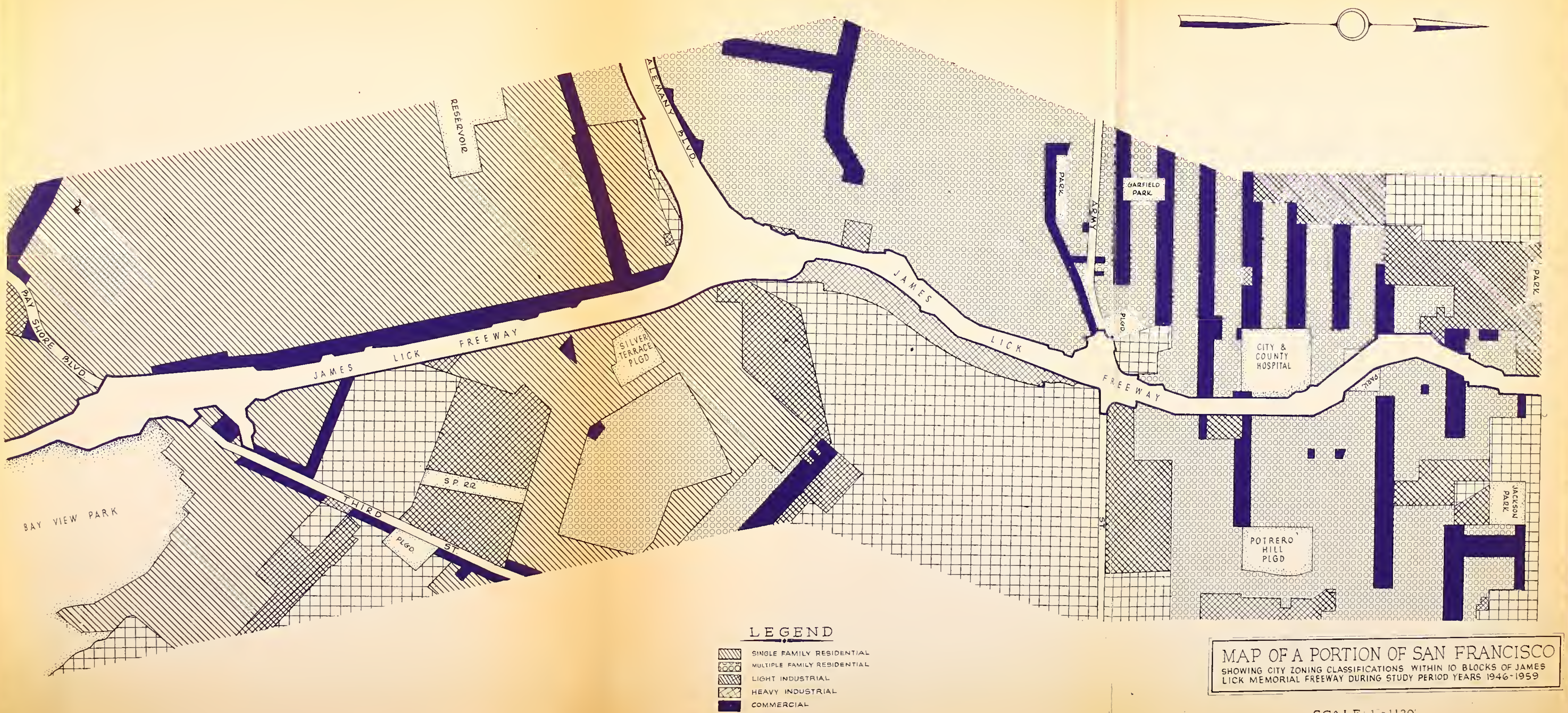

2
17TH
ST
To Downtown SAN FRANCISCO
ST.
W
E
SEC 1
ST
ARMY
ST
ARMY
ST.
MISSION
SEC. 2
BLVD
ALEMANY
THIRD
To DALY CITY
SEC. 3
FREEWAY
TIER 1
TIER 2
STUDY AREA
To PENINSULA
SCALE
0
0.5 Mi

STUDY AREA

MAP OF A PORTION OF SAN FRANCISCO SHOWING THE RELATION OF STUDY AREA TIERS 1 & 2 TO THE JAMES LICK MEMORIAL FREEWAY AND THE 3 SECTIONS INTO THEY ARE DIVIDED


TO PENINSULA
TO DALY CITY
TO DOWNTOWN SAN FRANCISCO
PORTOLA
BERNAL HEIGHTS
SILVER TERRACE
ISLAIS CREEK
SOUTH BASIN
POTRERO HILL
W
E
S.P. RR.
BAY SHORE BLVD
SAN BRUNO AVE
ALEMANY BLVD
FARMERS MKT
FUTURE RAMPS
SOMERSET ST
GOETTINGEN
BRUSSELS
GIRARD
CAMPBELL AVE
BLANKEN AVE
WARD
ORDWAY
MANSELL
OLMSTEAD
DWIGHT
WOOLSEY
WAYLAND
BACON
BURROWS
SILLIMAN
SILVER AVE
HALE
NEVADA
PUTNAM
CORTLAND AVE
BRADFORD
PERALTA AVE
ALABAMA ST
BREWSTER
HOLLADAY
INDUSTRIAL
LOOMIS
CHARTER OAK AVE
ELMIRA ST
BARNEVELD AVE
SILVER TERR PLGD
PHELPS
CARROLL
THORNTON AVE
REVERE
QUESADA
PALOU
OAKDALE AVE
McKINNON AVE
JERROLD AVE
ARMY ST
ROLPH PLGD
BRYANT
YORK
HAMPSHIRE
POTRERO AVE
UTAH ST
SAN BRUNO
VERMONT
CITY AND COUNTY HOSP.
KANSAS
RHODE ISLAND
DE HARO
CAROLINA
WISCONSIN
MARIPOSA
FRANKLIN SQ
PARK
26TH
25TH
24TH
23RD
22ND
21ST
20TH
19TH
18TH
17TH
16TH
BAY VIEW PARK
KEY
JAMESTOWN
THIRD
PAUL AVE
S.P. RR.
TUNNEL
LEGEND
FREEWAY
POINTS of INTEREST
SCALE: 1 INCH = 800 FEET

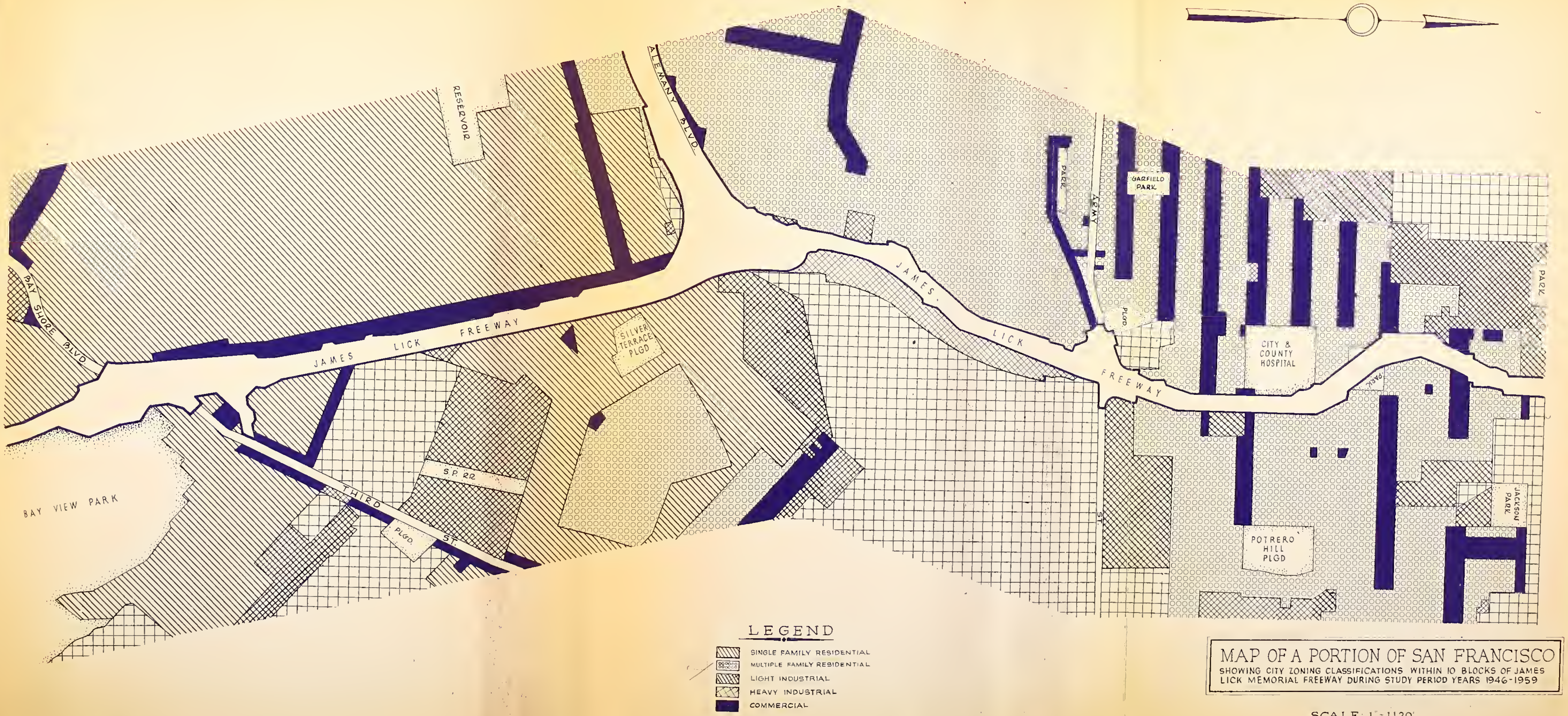
MAP OF THE JAMES LICK MEMORIAL FREEWAY AND VICINITY


RESERVOIR
ALEMANY BLVD
JAMES LICK FREEWAY
BAY SHORE BLVD
BAY VIEW PARK
THIRD ST
PLGD
SP RR
SILVER TERRACE PLGD
ARMY ST
PARK
GARFIELD PARK
PLGD
CITY & COUNTY HOSPITAL
PARK
PARK
JACKSON PARK
POTRERO HILL PLGD
LEGEND
▧ SINGLE FAMILY RESIDENTIAL
○ MULTIPLE FAMILY RESIDENTIAL
▨ LIGHT INDUSTRIAL
▦ HEAVY INDUSTRIAL
■ COMMERCIAL

MAP OF A PORTION OF SAN FRANCISCO

SHOWING CITY ZONING CLASSIFICATIONS WITHIN 10 BLOCKS OF JAMES LICK MEMORIAL FREEWAY DURING STUDY PERIOD YEARS 1946-1959

SCALE: 1" = 1120'


RESERVOIR
ALEMANY BLVD
BAY SHORE BLVD
JAMES LICK FREEWAY
SILVER TERRACE PLGD
S.P. RR
THIRD ST
PLGD
BAY VIEW PARK
JAMES LICK FREEWAY
PARK
ARMY
GARFIELD PARK
PLGD
CITY & COUNTY HOSPITAL
PARK
PARK
ST
POTRERO HILL PLGD
JACKSON PARK
LEGEND
▨ SINGLE FAMILY RESIDENTIAL
▨ MULTIPLE FAMILY RESIDENTIAL
▨ LIGHT INDUSTRIAL
▨ HEAVY INDUSTRIAL
■ COMMERCIAL

MAP OF A PORTION OF SAN FRANCISCO

SHOWING CITY ZONING CLASSIFICATIONS WITHIN 10 BLOCKS OF JAMES LICK MEMORIAL FREEWAY DURING STUDY PERIOD YEARS 1946-1959

SCALE: 1" = 1120'